TABLE 14 HIGH RISE STRUCTURAL STEEL BUILDINGS Buildings in course of construction not listed

Delication Constr. Above Arase Exterior and Ornamentation Intentior and Contents Building Equipment Cinidas Delication Constr. Above Canale Can	-		Builc	Building Information	tion		Earthquake Damage		
District Constr. Bealow Ause Exterior and Onnamentation Interior and Contents Building Equipment Wilhalie 57-59 6/3 350,000 Marble ficing crkd. Filing cabinets over, ML&P part crkd. AC & boilers moved Wilhalie 59-60 8/1 95,000 Wilhalie site dark An C & boilers moved Van Nuys 63-64 8/1 97,000 Lobby walls crkd. 4th thru 7th ML&P part crkd. 4th to 6fh None Van Nuys 63-64 10/0 Ll0by walls crkd. 4th thru 7th ML&P part crkd. 8th to 6fh None Sunset Strip 63-64 10/0 Ll0by walls crkd. 4th thru 7th ML&P part crkd. 8th to 6fh None Beverly Hills 63-64 10/0 Ll0by walls crkd. 4th thru 7th ML&P part crkd. 8th to 6fh None Beverly Hills 63-64 10/0 Ll0by walls crkd. 4th thru 7th ML&P part crkd. 8th crkd. all frs. None None Hollywood 63-64 10/0 Ll0by walls crkd. 4th thru 7th ML&P part crkd. 8th crkd. 4th thru 7th ML&P part crkd. 8th crkd. 4th thru 7th ML&P part crkd. 8th crkd. 4th thru 7th M		<u> </u>		Stories Above/					Epicentral Distance
Beverly Hills 1955 8/1 350,000 Marble facing crkd. Filing cubinerts over, ML&P part crkd. AC & bollers moved 2	Bldg.	District	Constr. Date	Below	Area*	Exterior and Ornamentation	Interior and Contents	Building Equipment	(miles)
Parenty Hills 1955 8 1 92,000 Windows 5th & 7th Mage 5th to 6th None 2		Vilehira	57.50	6/3	350.000	Marble facing crkd.	Filing cabinets over, ML&P part. crkd.	AC & boilers moved	22.5
Pecerty Hills 55-60 811 85,000 Unadows 3rd	_	leverly Hills	1955	8/1	92,000	Windows 5th & 7th	Part., ceiling tiles damg.	None	22.0
Van Nuys 63-54 8/0 97,000 Lobby walls crkd. 4th thru 7th ML&P part crkd. Restr. damg. 2nd None None Silverman Obks 64-65 8/1 37,000 Lobby walls crkd. 4th thru 7th Books, pictures fell None 2 Sumset Strip 60-61 9/3 10,000 Front windows 1st, 4th, 8th Books, pictures fell None 2 Beverly Hills 63-64 10/0 110,000 Cone. ext walls crkd. All firs. ML&P crkd., caling the fell None None Beverly Hills 63-64 10/1 10,000 Windows 2 to, 6, 8, 9 Books, lamps, file cabinet fell None None Hollywood 65-56 12/1 120,000 Windows 2 to, 6, 8, 9 Books, lamps, file cabinet fell None None Hollywood 65-67 12/1 1200,000 None Crkd. 4ty. 4th and 9th None Crkd. 4ty. 4th and 9th None Hollywood 65-67 13/1 200,000 Nindows 2 to, 6, 8, 9 Books, lamps, file cabinet fell None None Hollywood <td></td> <td>everly Hills</td> <td>29-60</td> <td>8/1</td> <td>85,000</td> <td>Windows 3rd</td> <td>ML&P stairwell crkd. 4th to 6th</td> <td>Slight damg. elev. wts.</td> <td>22.0</td>		everly Hills	29-60	8/1	85,000	Windows 3rd	ML&P stairwell crkd. 4th to 6th	Slight damg. elev. wts.	22.0
Surrest Strip 64-65 8/1 45,000 Windows 1st, 4th, 8th Books, pictures fell Elev. wts. loose 1 Surrest Strip 60-61 9/3 100,000 Forent window File cabinets, books [aght fixtures fell None 2 Beverly Hills 63-64 10/0 110,000 None 11/2 280,000 Windows broke & shifted L&P walls crkd., ceiling tide fell None 2 Bowntown L.A. 62-63 11/2 280,000 Windows broke & shifted L&P walls crkd., ceiling tide fell None 2 Misable Mile 58-59 12/1 139,000 Windows toke & shifted L&P walls crkd., ceiling tide fell None AC yoke broke Westwood 60-61 12/1 139,000 None Downs. Downs. AC yoke broke AC yoke broke Westwood 60-61 12/1 139,000 None Downs. Downs. AC yoke broke AC moved Hollywood 65-67 12/1 120,000 Windows tide AC moved AC moved <t< td=""><td>_</td><td>(an Nive</td><td>63-64</td><td>8/0</td><td>97,000</td><td>Lobby walls crkd. 4th thru 7th</td><td>ML&P part. crkd. Restr. damg. 2nd</td><td>None</td><td>14.0</td></t<>	_	(an Nive	63-64	8/0	97,000	Lobby walls crkd. 4th thru 7th	ML&P part. crkd. Restr. damg. 2nd	None	14.0
Hollywood 69-61 93 100,000 Front window File cabinets, books, light fixtures fell None 2	_	herman Oaks	64-65	8/1	45,000	Windows 1st, 4th, 8th	Books, pictures fell	Elev. wts. loose	17.0
Beverity Hills 63-64 10/0 110,000 None 20 111/2 280,000 Windows broke & shifted 25-56 12/1 110,000 Windows broke & shifted 25-56 12/1 110,000 Windows broke & shifted 25-56 12/1 110,000 Windows broke & shifted 25-56 12/1 120,000 Windows broke & shifted 25-56 12/1 120,000 None 20 20 20 20 20 20 20 2		ingest Strin	60-61	9/3	100.000	Front window	File cabinets, books, light fixtures fell	None	20.0
Beweight Hills 63-64 10/1 100,000 None All firs ML&P crkd., ceiling tile fell Slight to elev. 2 Downtown L.A. 62-63 11/2 280,000 Windows 2, 5, 6, 8, 9 Book slight cracking to L&P walls crkd. all firs. None None Hollywood 58-56 12/1 110,000 Ext. conc. wall crkd. Books, lamps, file cabinet fell None AC yoke broke Westwood 66-61 12/1 128,000 None Drywl. crkd. all firs. None AC moved Hollywood 55-67 13/1 200,000 Tile facing crkd. Drywl. crkd. Beacon light fell Hollywood 55-67 13/1 200,000 Tile facing crkd. Drywl. crkd. Beacon light fell Hollywood 68-69 14/0 188.00 None Crkd. drywl. crkd. Beacon light fell Wildshice 61-62 13/1 200,000 Tile facing crkd. Crkd. drywl. books fell None Wilshire 61-62 15/2 210,000 None Crkd. drywl. all frs. None	_	John School	63-64	10/0	110,000	Conc. ext. walls crkd.	Intr. walls crkd., books fell, furn. damg.	None	20.0
Downstrown A. 62-63 1112 280,000 Windows 2,5,6,8,9 So. stainwells dame. None Hollywood 58-56 12/1 102,000 Windows 2,5,6,8,9 So. stainwells dame. None Miracle Mile 53-56 12/1 110,000 Ext. conc. wall crkd. Books, lamps, file cabinet fell AC yoke broke Sumset Strip 62-63 12/1 110,000 Ext. conc. wall crkd. Books, lamps, file cabinet fell None Sumset Strip 62-67 12/1 120,000 None Dryw. crkd. AC yoke broke Hollywood 65-67 12/1 100,000 None Crkd. drywl. crkd. AC yoke broke Hollywood 68-69 14/0 180,000 None Crkd. drywl. alf frs. AC moved Hollywood 68-69 14/0 180,000 None Crkd. drywl. alf frs. AC moved Sustavel of conc. 180,000 None Crkd. ML&P walls crkd. L&P Mone AC moved Westwood 68-69 14/0 180,000 None		toverly Hills	63-64	10/1	100,000	None	All firs. ML&P crkd., ceiling tile fell	Slight to elev.	22.0
Mone Section	_	Nowatown I A	62-63	11/2	280.000	Windows broke & shifted	L&P walls crkd, all firs.	None	24.0
Marcel Mile 55-56 121 110,000 Ext. conc. wall crkd. Books, lamps, file cabinet fell AC yoke broke 2 2 121 110,000 None Slight cracking to L&P None None Contact Strate 12/1 128,000 None Slight cracking to L&P None Contact Strate 12/1 128,000 None Slight drywl. crkd. all firs. None Contact Strate Strate Strat		Jollingsod	58.50	12/1	102.000	Windows 2. 5. 6. 8. 9	So. stairwells damg.	None	20.0
Sunset Strip 62-63 12/1 159,000 None Slight cracking to L&P None 2 Westwood 65-67 12/1 128,000 Tile facing crkd. Drywl. crkd. all firs. AC moved AC moved Hollywood 65-67 12/1 200,000 Tile facing crkd. Slight drywl. crkd. AC moved Hollywood 55-56 13/0 95,000 Windows all firs. Crkd. ML&P walls through None Hollywood 68-69 14/0 188,000 None Crkd. ML&P walls through None Sunset Strip 63-64 15/1 140,000 None Crkd. ML&P walls through None Century City 68-70 15/3 340,000 None Crkd. ML&P walls through None Century City 68-70 15/3 340,000 None Crkd. ML&P walls through None Miracle Mile 63-64 18/1 160,000 None Crkd. ML&P walls through None Miracle Mile 63-64 18/1 160,000 None	-	Jony wood	55.56	12/1	110.000	Ext. conc. wall crkd.	Books, lamps, file cabinet fell	AC yoke broke	22.5
Suizer suit Octob 12/1 128 000 Tile facing crkd. Drywl. crkd. all ffs. None Hollywood 65-67 12/1 200,000 Windows all ffs. Crkd. drywl. crkd. AC moved Hollywood 55-56 13/0 95,000 Windows all ffs. Crkd. drywl. 3rd to 9th Beacon light fell Wilshire 57-58 13/1 200,000 Tile loose Crkd. bmt. walls (conc.), crkd. L&P None Westwood 68-69 14/0 188,000 Window crkd. 8th 2 cracks in drywl., books fell None Westwood 61-62 15/2 140,000 None 2 cracks in drywl., books fell AC out of adjust Century City 68-70 15/3 340,000 None Crkd. drywl. all ffs. AC out of adjust Miracle Mile 63-64 19/3 90,000 None Crkd. drywl. all ffs. Crkd. drywl. all ffs. Miracle Mile 69-61 22/1 15/3 90,000 None Crkd. drywl. all ffs. Wilshire 60-61 22/1 453,000		miscot Strin	69-63	12/1	159,000	None	Slight cracking to L&P	None	20.0
Hollywood S5-67 121 200,000 None Slight drywl. crkd. AC moved Hollywood S5-68 13/0 95,000 Windows all firs. Crkd. drywl. 3rd to 9th Beacon light fell Beacon light fell Mone Crkd. drywl. 3rd to 9th None Crkd. ML&P walls throut None Crkd. drywl. all firs. Slight elev. damg. Crkd. ML&P walls throut None Crkd. drywl. all firs. Conc. firs. crkd. drywl. all firs. Conc. firs. crkd. drywl. all firs. Crkd. drywl. al		Wasturood	19-09	12/1	128.000	Tile facing crkd.	Drywl. crkd. all firs.	None	22.0
Hollywood 55-56 13/0 95,000 Windows all firs. Crkd. drywl. 3rd to 9th Beacon light fell Wilshire 87-58 13/1 200,000 Tile loose Crkd. ML&P walls (conc.), crkd. L&P None Hollywood 68-69 14/0 188,000 Window crkd. 8th Crkd. ML&P walls throut None Sunset Strip 63-64 15/1 140,000 None Crkd. ML&P walls throut None Century City 68-70 15/3 340,000 None Crkd. ML&P walls throut None Century City 68-70 15/3 340,000 None Crkd. ML&P walls throut None Miracle Mile 53-64 18/1 160,000 None Crkd. drywl. all firs. Crkd. drywl. all firs. Crkd. drywl. all firs. Crkd. drywl. all firs. Crkd. drywl. 4th to 14th Ac out of adjust Miracle Mile 59-61 22/1 450,000 None Crkd. drywl. all firs. Crkd. drywl. 4th to 14th Elev. cables jumped Mishine 60-61 22/1 475,000 None	_	Tollywood	19-59	12/1	200.000	None	Slight drywl. crkd.	AC moved	20.0
Observation 7.7-58 13/1 200,000 Tile loose Crkd. bsmt. walls (conc.), crkd. L&P None Hollywood 68-69 14/0 188,000 None Crkd. ML&P walls throut None Sunset Strip 63-64 15/1 140,000 None Crkd. ML&P walls throut None Century City 68-70 15/3 340,000 None Crkd. ML&P walls throut None Century City 68-70 15/3 340,000 None Crkd. drywl. all flrs. None Century City 68-70 15/3 340,000 None Crkd. drywl. all flrs. Slight elev. damg. Miracle Mile 59-61 22/1 10,000 None Crkd. drywl. all flrs. Crkd. drywl. all flrs. Crkd. drywl. all flrs. Crkd. drywl. all flrs. Elev. damg. Miracle Mile 59-61 22/1 453,000 None Crkd. drywl. 4th to 14th Elev. damg. Elev. damg. Westwood 69-70 24/4 605,000 Window seals broken Crkd. drywl. all flrs. Elev. broke loose from track		Johnwood	55.56	13/0	95.000	Windows all firs.	Crkd, drywl. 3rd to 9th	Beacon light fell	20.0
Highwood 68-69 14/0 188,000 None Cracks in drywl., books fell None Westwood 61-62 15/2 231,000 Window crkd. 8th 2 cracks in drywl., books fell None Sunset Strip 63-64 15/1 140,000 None Stairwell conc. wall crkd. AC out of adjust Century City 68-70 15/3 340,000 None Crkd. drywl. all flrs. None Miracle Mile 61-64 19/3 90,000 None Crkd. drywl. all flrs. Cable in elev. damg. Miracle Mile 59-61 22/1 22/1 22/1 453,000 None Crkd. drywl. 4th to 14th Elev. damg. Wilshire 60-61 22/1 453,000 Marble crkd. in lobby Crkd. drywl. 4th to 14th Elev. damg. Wilshire 61-63 22/1 356,000 Ext. conc. walls crkd. in lobby Conc. flrs. crkd. 21st to 25th Elev. damg. Wilshire 67-69 31/1 750,00 Window seals broken Crkd. drywl. all flrs. Elev. cables damg. Miracle Mi		John wood	57-58	13/1	200,000	Tile loose	Crkd. bsmt. walls (conc.), crkd. L&P	None	22.5
Mizerie Mile 60-61 22/1 22/1 31/1 32/1		Tolling	68-69	14/0	188.000	None	Crkd, ML&P walls throout	None	20.0
Westwood 63-64 15/1 140,000 None Crkd., ML&P drywl. all flrs. AC out of adjust Century City 63-64 15/1 140,000 None Stairwell conc. wall crkd. None Century City 68-70 15/3 340,000 None Crkd. drywl. all flrs. Slight elev. damg. Miracle Mile 53-64 18/1 160,000 None Crkd. ML&P walls Cable in elev. damg. Miracle Mile 59-61 22/1 22/1 453,000 None Crkd. ML&P core, books fell Elev. damg. Wilshire 60-61 22/1 453,000 Marble crkd. in lobby Crkd. drywl. 4th to 14th Elev. damg. Westwood 69-70 24/4 605,000 Window seals broken Conc. flrs. crkd. 21st to 25th Elev. cables damg. Wilshire 67-69 31/1 750,000 Marble broke in lobby Crkd. drywl. all flrs. Elev. cables damg. Downtown L.A. 1963 32/2 700,000 Tile damage ext. walls L&P cores crkd. stairs & elev. Elev. cables damg.		Tour wood	61.63	15/7	231 000	Window crkd. 8th	2 cracks in drywl., books fell	None	22.0
Sunset Strip 05-04 15/1 140,000 None Stairwell conc. wall crkd. None Century City 68-70 15/3 340,000 None Crkd. drywl. ali flrs. Slight elev. damg. Miracle Mile 63-64 19/3 90,000 None Crkd. ML&P walls Elev. damg. Miracle Mile 59-61 22/1 210,000 None Crkd. drywl. 4th to 14th Elev. damg. Wilshire 60-61 22/1 453,000 Marble crkd. in lobby Crkd. drywl. 4th to 14th Elev. cables jumped Wilshire 61-63 22/1 356,000 Ext. conc. walls crkd. Conc. flrs. crkd. 21st to 25th Elev. cables damg. Wishire 67-69 31/1 750,000 Marble broke in lobby ML&P walls crkd. all flrs. Elev. cables damg. Mishire 67-69 31/4 475,000 None Crkd. drywl. all flrs. Elev. broke loose from track Mono 1968 31/4 475,000 Wange ext. walls L&P walls crkd. all flrs. Elev. cables damg. Downtown L.A. 196	_	Westwood	70-10	1/51	140 000	None	Crkd., ML&P drywl. all firs.	AC out of adjust	20.0
Century City Concentry City Concentry City Crkd. drywl. all flrs. Crkd. drywl. all flrs. Slight elev. damg. Miracle Mile 63-64 18/1 160,000 None Crkd. ML&P walls Cable in elev. damg. Hollywood 61-64 19/3 90,000 None Crkd. ML&P walls Elev. damg. Miracle Mile 59-61 22/1 453,000 Marble crkd. in lobby Crkd. drywl. 4th to 14th Elev. cables jumped Wilshire 61-63 22/1 356,000 Ext. conc. walls crkd. Conc. flrs. crkd. 21st to 25th Elev. cable & wts. moved Wilshire 67-69 31/1 750,000 Marble broke in lobby ML&P walls crkd. all flrs. Elev. cables damg. Miracle Mile 1963 31/4 475,000 None L&P walls crkd. all flrs. Elev. broke loose from track Downtown L.A. 1963 32/2 700,000 None L&P cores crkd. stairs & elev. Elev. cables damg.		Sunset Surip	60-04	15/3	340,000	None	Stairwell conc. wall crkd.	None	23.0
Hollywood 61-64 19/3 90,000 None Crkd. ML&P walls Crkd. ML&P core, books fell Elev. damg. Hollywood 61-64 19/3 90,000 None Crkd. ML&P core, books fell Elev. damg. Wilshire 60-61 22/1 453,000 Marble crkd. in lobby Crkd. drywl. 4th to 14th Elev. cables jumped Wilshire 61-63 22/1 356,000 Ext. conc. walls crkd. Crkd. drywl. 4th to 14th Elev. cables jumped Wilshire 61-63 22/1 356,000 Window seals broken Conc. flrs. crkd. 21st to 25th Elev. cable & wts. moved Wishire 67-69 31/1 750,000 Marble broke in lobby ML&P walls crkd. all flrs. Elev. broke loose from track Miracle Mile 1963 31/4 475,000 None L&P walls crkd. all flrs. Elev. broke loose from track Downtown L.A. 65-67 42/7 700,000 None L&P cores crkd. stairs & elev. Elev. cables damg.		Jennary City	63.64	18/1	160.000		Crkd. drywl. ali flrs.	Slight elev. damg.	22.5
Miracle Mile 59-61 22/1 210,000 None Crkd. ML&P core, books fell Elev. damg. Wishire 60-61 22/1 453,000 Marble crkd. in lobby Crkd. drywl. 4th to 14th Elev. cables jumped Wishire 61-63 22/1 356,000 Ext. conc. walls crkd. Crkd. drywl. 4th to 14th Elev. cables jumped Wishire 61-63 22/1 356,000 Window seals broken Conc. flrs. crkd. 21st to 25th Elev. cable & wts. moved Wishire 67-69 31/1 750,000 Marble broke in lobby ML&P walls crkd. all flrs. Elev. broke loose from track Miracle Mile 1968 31/4 475,000 None L&P walls crkd. all flrs. AC fan shifted Downtown L.A. 1963 32/2 700,000 None L&P cores crkd. stairs & elev. Elev. cables damg.	_	Hollywood	61-64	19/3	90,000		Crkd, ML&P walls	Cable in elev. damg.	20.0
Wilshire 60-61 22/1 453,000 Marble crkd. in lobby Crkd. drywl. 4th to 14th Elev. vas. moved Wilshire 61-63 22/1 356,000 Ext. conc. walls crkd. Ceiling tile fell, books fell Elev. wts. moved Wilshire 69-70 24/4 605,000 Window seals broken Conc. flrs. crkd. 21st to 25th Elev. cables & wts. moved Wilshire 67-69 31/1 750,000 Marble broke in lobby ML&P walls crkd. all flrs. Elev. cables damg. Miracle Mile 1968 31/4 475,000 None L&P walls crkd. all flrs. AC fan shifted Downtown L.A. 65-67 42/7 700,000 None L&P cores crkd. stairs & elev. Elev. cables damg.	-	Mirnela Mila	19.03	22/1	210,000	_	Crkd. ML&P core, books fell	Elev. damg.	22.5
Wishine 61-63 22/1 356,000 Ext. conc. walls crkd. Ceiling tile fell, books fell Elev. wts. moved Wishire 69-70 24/4 605,000 Window seals broken Conc. flrs. crkd. 21st to 25th Elev. cable & wts. moved Wilshire 67-69 31/1 750,000 Marble broke in lobby ML&P walls crkd. all flrs. Elev. cables damg. Miracle Mile 1968 31/4 475,000 None L&P walls crkd. all flrs. AC fan shifted Downtown L.A. 42/7 700,000 None L&P cores crkd. stairs & elev. Elev. cables damg.		Miliatio	60.61	22/1	453.000		Crkd. drywl. 4th to 14th	Elev. cables jumped	22.5
Westwood 69-70 24/4 605,000 Window seals broken Conc. flrs. crkd. 21st to 25th Elev. cable & wts. moved Wishire 67-69 31/1 750,000 Marble broke in lobby ML&P walls crkd. all firs. Elev. cables damg. Miracle Mile 1968 31/4 475,000 None L&P walls crkd. all firs. Elev. broke loose from track Downtown L.A. 1963 32/2 700,000 Tile damage ext. walls L&P cores crkd. stairs & elev. Elev. cables damg.	+7	WIISHING	61-63	22/1	356 000	_	Ceiling tile fell, books fell	Elev. wts. moved	22.5
Wilshire 67-69 31/1 750,000 Marble broke in lobby ML&P walls crkd. all flrs. Elev. cables damg. Miracle Mile 1968 31/4 475,000 None Crkd. drywl. all flrs. Elev. broke loose from track Downtown L.A. 1963 32/2 700,000 Tile damage ext. walls L&P cores crkd. stairs & elev. Elev. cables damg.	57	Wastwood	02-10	24/4	605,000		Conc. flrs. crkd. 21st to 25th	Elev. cable & wts. moved	22.0
Miracle Mile 1968 31/4 475,000 None Crkd. drywl. all firs. Elev. broke loose from track Downtown L.A. 1963 32/2 700,000 Tile damage ext. walls L&P walls crkd. all firs. AC fan shifted Elev. cables damg.	0 6	Wilchire	67.69	31/1	750.000		ML&P walls crkd. all flrs.	Elev. cables damg.	22.5
Downtown L.A. 1963 32/2 700,000 Tile damage ext. walls L&P walls crkd. all firs. AC fan shifted L&P cores crkd. stairs & elev. Elev. cables damg.	000	Miracle Mile	1968	31/4	475.000	None	Crkd. drywl. all firs.	Elev. broke loose from track	22.5
Downtown L.A. 65-67 42/ 700,000 None L&P cores crkd. stairs & elev. Elev. cables damg.	2 0	Downtown [A	1963	32/2	700,000	Tile damage ext. walls	L&P walls crkd. all firs.	AC fan shifted	24.0
TOWNS THE PERSON OF THE PERSON	_	Downtown I A	29-59	42/	700,000	None	L&P cores crkd. stairs & elev.	Elev. cables damg.	24.0

Area is total square footage above grade

observed damage patterns were about the same. Flexibly framed buildings, whether concrete or steel, suffered mostly cosmetic damage on February 9th when relatively stiff stair-elevator and utility cores within the frame experienced large story-to-story relative movements. Elevator cables and the containment of elevator counterweights in the taller buildings were damaged and caused damage, and these features necessarily must receive more design attention in the future.

The greatest reported dollar loss to a completed steel frame building occurred in a 42 story building in downtown Los Angeles, 24 miles from the epicenter. Here, a \$200,000 loss to plastered partitions and elevator equipment resulted. Considering a \$20,700,000 original investment in 1965-67, the loss represents almost 1% of value.

A 22 story steel framed structure built in 1961-63 in the Wilshire District suffered a \$100,000 loss, just slightly greater than 1% of value, when an exterior concrete shear wall cracked, ceiling tiles fell and elevator counter balance weights were dislodged.

The twin 52 story office towers of the \$175 million dollar Atlantic-Richfield Plaza Towers in downtown Los Angeles were in the latter stages of construction when the earthquake occurred. Apparently, a 25% increase in the number of cracks in the welds in the two lower stories of both steel framed towers was found after the earthquake, with this increase seemingly due to the earthquake. Miniscule cracks in the welds connecting heavy metal members occur during the normal welding process and these cracks are normal to this work; routine ultrasonic testing is used to discover these cracks and allow for repairs. It is premature to speculate very far into this particular case due to the lack of time and detailed information, but the potential problem of earthquake induced weld stress cracks in modern steel frame buildings is disquieting. Additionally, there is no assurance that all welded steel frame buildings will be as adequately inspected as was the Atlantic-Richfield towers. The cost of the repair of all welds, regardless of origin, has been placed at \$400,000.

COMPARATIVE DATA

Figures 47 and 48 show dollar losses in terms of cents per square foot of total floor area (above ground) as functions of epicentral distance and of types of construction (concrete and steel). Dollar losses include building and equipment repair costs. Occasionally, contents losses were included when they could not be segregated, but these contents losses were small and have no significant effect on the conclusions. The following conclusions may be drawn from an examination of figures 47 and 48.

- 1. Steel frame and reinforced concrete high-rise generally performed equally well when located 15 to 25 miles from the epicenter, with exception as noted in (4), below.
- No simple insurance rating or underwriting guidelines for story height vs. epicentral distance can be established solely from this earthquake. No doubt, local geology and the building's natural periods of vibration played significant roles.
- 3. The loss per square foot was under 15 cents for 82 percent of all examined buildings.
- 4. Where exceptions occurred to (1) and (3), above, they were usually adverse with respect to reinforced concrete construction, as follows:

Dollar Loss in Cents	
per sq. ft.	Material
680.	Concrete
192.	Concrete
65.5	Concrete
41.7	Concrete
35.5	Concrete
35.0	Steel
33.3	Concrete
29.5	Concrete
28.3	Steel
28.0	Steel

The foregoing experience suggests that reinforced concrete high-rise buildings will, upon occasion, experience a greater degree of significant damage than will comparable steel frame structures.

From a percentage loss standpoint, completed steel frame buildings never exceeded about 1% of value. A total of 5 reinforced concrete structures had losses over 1%, and two of these had losses over 5%.

NON-EARTHQUAKE RESISTIVE HIGH-RISE BUILDINGS

Older non-earthquake resistive high-rise buildings performed quite badly when compared to modern high-rise construction, based on limited selected information on older structures in the downtown Los Angeles area.

The buildings in Table 15 were erected between the years of 1906 and 1916, prior to the enactment of earth-quake requirements in the Los Angeles City code. That is, the engineering design considered only the vertical loadings and not earthquake forces. However, during that construction period, fireproofing of the *steel frames* often was a monolithic concrete covering which inherently developed a strong "composite" structure of steel and concrete. This is not common under present construction methods which employ a sprayed-on light weight asbestos material.